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## **REMARKS**

### **Amendments**

Claims 1, 3, 12, 18 and 21 are amended above to address the claim objections presented at the top of page 2 of the Office Action of November 1, 2001. It is respectfully submitted that these amendments do not require further search or consideration.

In addition, claim 1 is amended to incorporate the recitation of claim 5 which is to be cancelled. As amended, claim 1 corresponds to claim 5 rewritten in independent form. It is respectfully submitted that this amendment also does not require further search and consideration. Entry of the amendments is respectfully requested.

It is noted that even if the above amendments are not entered, the applicants' request that the Examiner reconsider the rejections with respect to at least claim 5.

### **Rejection under 35 U.S.C. § 103 in View of McNeil (U.S. Patent 5,089,295)**

All of the pending claims, except for claim 25, are rejected under 35 U.S.C. § 103 in view of McNeil (US '295). This rejection is again respectfully traversed.

The rejection focuses on two portions of the disclosure of US '295. At col. 11, lines 46-67, US '295 describes monomers or comonomers that can be used in the process of the described invention. At cols. 21-23, US '295 describes four examples. In examples I and II, the monomers used in the suspension polymerization process are styrene and 1,3-butadiene. Conversely, in Examples III and IV, the monomers used are styrene and n-butyl methacrylate. Specifically, it is argued in the rejection that it would be obvious to modify Examples III and IV of US '295 to use a monomer having a carboxylic acid group, such as acrylic acid in place of n-butyl methacrylate or butadiene on grounds that these monomers are allegedly taught as equivalents by US '295.

However, nowhere within the disclosure of US '295 is there a statement which indicates that in the processes described therein, acrylic acid or any other carboxylic acid monomer would be equivalent to an acrylic acid ester or (meth)acrylic acid ester such as n-butyl methacrylate. The disclosure relied on by the rejection at col. 11 merely lists monomers that can be used in the process described in US '295. There is no indication that each and every individual monomer described therein are equivalents for purposes of the disclosed process.

The monomer list includes a broad genus of monomers which includes the classes of monomers known as vinyl monomers, monocarboxylic acids and their derivatives, dicarboxylic acids, vinyl esters, vinyl ketones, vinyl naphthalene, unsaturated monolefins, vinylidene halides, and N-vinyl compounds. The mere fact that US '295 lists these classes of monomers as being suitable for use in the disclosed process does not in any way imply that the each of the classes, let alone each of the members thereof, are equivalents when used in the disclosed process. Similarly, while acrylic acid and butyl methacrylate are both listed as examples of monomers within the class "monocarboxylic acids and their derivatives," nothing within the disclosure of US '295 indicates that these two monomers would function equivalently when used in the disclosed process.

If one looks beyond the mere listing of monomers in US '295 and examines the chemical nature of these compounds the inaccuracy of the alleged equivalence becomes readily recognizable by one of ordinary skill in the art. Monomers that are not soluble in water, such as methyl methacrylate and ethyl methacrylate, are well suited for suspension polymerization because the monomers will be suspended within the discrete droplets in the aqueous dispersion medium. However, other monomers are soluble in water, such as acrylic acid and methacrylic acid, due to the presence of, for example, carboxylic acid groups. One of ordinary skill in the art knows that these monomers are soluble in water. See the paragraph bridging pages 3 and 4 of applicants' specification. When a suspension polymerization is attempted using monomers that are partially or fully water soluble, the monomers will partition into the aqueous phase, which, of course, will adversely affect polymerization. See page 4, lines 7-21 of applicants' specification.

While it is possible to use low amounts of carboxylic acid-containing monomers in suspension polymerization, the partitioning into the dispersion medium becomes more problematic as the concentration of the carboxylic acid-containing monomer increases.

Turning again to col. 11 of US '295, one of ordinary skill in the art would recognize that carboxylic acid-containing monomers such as acrylic acid are at least partially soluble in aqueous dispersion mediums whereas acrylate monomers are not soluble in aqueous dispersion mediums. Thus, one of ordinary skill would clearly recognize that merely because both acrylic acid and butyl methacrylate are listed as monomers for the described process this does not indicate that these monomers are equivalents when used in the disclosed process.

Turning to Examples III and IV of US '295, it is stated in rejection that these examples use a monomer mixture which can contain greater than 20 weight percent of n-butyl methacrylate. Specifically, Example III contains 42.2 weight % n-butyl acrylate, relative to the combination of n-butyl acrylate and styrene, whereas Example IV contains 41.9 weight % n-butyl methacrylate, relative to the combination of n-butyl methacrylate and styrene. However, US '295 provides no disclosure or suggestion that would motivate one of ordinary skill in the art to replace this high percent of n-butyl methacrylate with a carboxylic acid-containing monomer such as acrylic acid. Nothing within the disclosure of US '295 provides any suggestion that water soluble carboxylic acid monomers can be used in a suspension polymerization process in an amount equivalent to water insoluble monomers. Nor is there any suggestion in US '295 of using carboxylic acid monomers at concentrations of 20% or higher in a suspension polymerization process.

Other aspects presented in the examples of US '295 also fail to suggest features of applicants' claim process. For example, all of the examples use Mapico Black magnetite. Presumably, the rejection relies upon this component of the suspension polymerization process as a water-insoluble particulate stabilizer. However, nothing within the disclosure of US '295 suggests that this material has a size of less than 100 nm. Nor is there any suggestion in the disclosure of US '295 of using a water-insoluble stabilizer having such a size. Compare applicants claim 1.

Further, it is noted that in Examples III and IV of US '295 the dispersion medium does

not contain a water soluble salt. In the recent Office Action it is argued that use of such a salt in accordance with applicants' process would be obvious. Applicant's respectfully disagree. It is noted that in Examples I and II, the aqueous dispersion medium of deionized water contains a small amount of sodium nitrite, *i.e.*, 0.1 weight % (0.246g sodium nitrate to 246g deionized water). Furthermore, US '295 describes concentrations of sodium nitrate of from about 500 to about 1,500 ppm. See col. 9, lines 62-63.

It is respectfully submitted that there is clearly no suggestion in US '295 for using a water-soluble salt in an amount of 10-50 weight % relative to the dispersion medium. Compare claim 1 as amended or compare prior claim 5. See also applicants' comparative Example 6 which contains 115.8g sodium chloride to 2,317g distilled water, *i.e.*, a concentration of 5 weight %. In this example, no useful particles were formed because the monomer droplets agglomerated. On the other hand, compare Example 7 which contains 231.7g sodium chloride per 2,317g distilled water, *i.e.*, a concentration of 10 weight %. In this example, suitable particles were obtained within a particle size range of 2-10 microns.

In view of the above remarks, it is respectfully submitted that US '295 fails to render obvious applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

**Rejection under 35 U.S.C. § 102(b)/103  
in View of Utsumi et al. (U.S. Patent 5,002,847)**

US '847 discloses a process in which a raw materials-mixture is subjected to suspension polymerization. The raw materials-mixture comprises addition polymerizable monomers with coloring agents and water. The mixture can also contain as a suspension stabilizer a mixture of inorganic suspension stabilizer and an organic suspension stabilizer in an amount of from 0.1-20 parts by weight per 100 parts by weight of the inorganic suspension stabilizer.

The monomers used in the suspension polymerization process are polymerizable unsaturated monomers that have one ethylenically unsaturated bond in molecule. At col. 3, line 54 through col. 4, line 24, US '847 describes a broad genus of addition polymerizable monomers.

Further, it is disclosed that these monomers can be used alone or in combination. Included within the list of addition polymerizable monomers are several general classes such as styrene and its derivatives, ethylenically unsaturated monoolefins, vinyl halides, vinyl esters, methacrylic acid and  $\alpha$ -methylene aliphatic monocarboxylic acid esters thereof, acrylic acid and acrylic acid esters, vinyl ethers, vinyl ketones, etc.

As noted above, acrylic acid and methacrylic acid are included within the list of additional polymerizable monomers. However, there is no disclosure in US '847 of a combination of a water-soluble ethylenically unsaturated monomer containing a carboxylic acid group and a water-insoluble ethylenically unsaturated monomer. The possible combinations within the broad genus of addition polymerizable monomers described in US '847 is quite numerous. There is nothing within the disclosure that leads one of ordinary skill in the art to select from within this broad genus a combination of a carboxylic acid-containing monomer which is water soluble and a water-insoluble ethylenically unsaturated monomer. Moreover, nothing suggests such a combination wherein the amount of carboxylic acid-containing monomers in the droplets is at least 20%.

It is noted that US '847 does make reference to addition polymerizable monomers that have a carboxy group. Specifically, it is disclosed that when using such an additional polymerizable monomer, it is preferred to perform polymerization using lithium phosphate as the suspension stabilizer. Here again, however, there is no specific disclosure of using a water soluble monomer containing a carboxylic acid group in combination with a water-insoluble ethylenically unsaturated monomer.

Regarding lithium phosphates, US '874 describes this material as a preferred suspension stabilizer. See col. 5, line 52-58. It is disclosed that when using lithium phosphates, the resultant polymer particles will likely have an average particle size of from 9.5 microns to 100 microns. In such a case, the suspension stabilizer can be easily removed from the suspension polymerization product. More importantly, US '847 cautions against processes for preparing lithium phosphate that fail to result in a water-insoluble salt being obtained. See col. 5, line 67 through col. 6, line 3.

It is respectfully submitted that US '874 fails to anticipate applicants' claimed invention.

As indicated in *Ex Parte Levy*, 17 USPQ2d 1461, 1462 (POBA 1990) in an anticipation rejection it is incumbent upon the Patent and Trademark Office to indicate where each and every feature of the recited invention is described in the prior art reference. In the instant case, US '847 fails to describe any specific embodiment in which a water-soluble carboxylic acid monomer is used in combination with a water-insoluble ethylenically unsaturated monomer. Moreover, there is no disclosure in US '847 which indicates a suspension polymerization process in which the monomer droplets within the aqueous phase comprise at least 20% of carboxylic acid-containing monomer. Further, the rejection and US '847 are devoid of any suggestion of the use of a water-insoluble particulate stabilizer having a size of less than 100 nanometers.

The disclosure of US '847 also fails to describe or suggest a suspension polymerization embodiment in which the aqueous phase contains a water-soluble inorganic salt. While it is alleged in the recent Office Action that lithium phosphate meets the feature of water-soluble inorganic salt, it is evident from the disclosure of US '847 that one of ordinary skill in the art would not consider lithium phosphate in the context of the process described therein as a water-soluble salt. See col. 5, line 67 through col. 6, line 3. The disclosure actually dissuades one from using lithium phosphate as a water-soluble salt.

US '847 fails to provide sufficient motivation to lead one of ordinary skill in the art to modify the process described therein in such a manner as to arrive at an embodiment according to applicants' claimed invention. Nothing within the disclosure of US '847, including the examples, suggests a carboxylic acid-containing monomer in combination with a water-insoluble monomer in an amount whereby the monomer droplets comprise at least 20% of the carboxylic acid-containing monomer. Further, US '847 is devoid of any suggestion of using an aqueous phase that contains a water-insoluble particulate stabilizer having a particle size of less than 100 nanometers and an effective amount of a water-soluble inorganic salt.

As noted above, the disclosure of US '847 clearly does not lead one of ordinary skill in the art to use lithium phosphate as a water soluble salt in the context of applicants' process. Moreover, even if one were to ignore the disclosure in US '847 that lithium phosphate is water-insoluble, there is no disclosure of using lithium phosphate in combination with a water-insoluble particulate stabilizer having a particle size of less than 100 nm. Further, there is no

suggestion of using a water-soluble inorganic salt in an amount of 10-50%.

The mere ability in and of itself to modify the disclosure of a reference does not in and of itself establish non-obviousness. See, *e.g.*, *In re Laskowski*, 10 USPQ 1397 (Fed. Cir. 1989). There is nothing presented within the disclosure of US '847 which leads one of ordinary skill in the art to select from all of the possible embodiments of suspension polymerization media described generically therein a suspension polymerization medium in accordance with that described in applicants' claimed invention.

In view of the above remarks, it is respectfully submitted that US '847 fails to anticipate or render obvious applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 102/103 is respectfully requested.

**Rejection under 35 U.S.C. § 102(b)/103  
in View of Kamiyama et al. (U.S. Patent 6,140,394)**

All of the pending claims are rejected as being anticipated or obvious in view of Kamiyama et al. (US '394). This rejection is also respectfully traversed.

US '394 discloses a suspension polymerization process in which the suspension comprises a dispersed phase containing an addition polymerizable monomeric composition and a continuous phase which contains a suspension stabilizer. The suspension stabilizer is described at col. 6, lines 27-50. However, there is no disclosure or suggestion of particle size with respect to the suspension stabilizer.

The dispersed phase comprises a monomeric composition. Monomers suitable for use in the polymerization process are described generically at col. 10, lines 1-26. These monomers include the classes of styrene and its derivatives; N- vinyl esters of organic acids, methacrylic acid and its derivatives; acrylic acid and its derivatives; N-vinyl compounds; vinyl naphthalenes and other polymerizable monomers.

In Example 1, the continuous phase contains polyvinyl alcohol, sodium sulfate (in amounts of 1% or 3% of water), and water. The monomer phase comprises styrene and butyl acrylate. In example 2, the continuous phase contains calcium phosphate, sodium



dodecylsulfonate (3% and 0.03% of water) and water. The monomers contained in the dispersed phase are styrene and butyl acrylate. In Example 3, the continuous phase contains polyvinyl alcohol, sodium sulfate (1% and 3% of water) and water. The monomers contained in the dispersed phase are styrene and butyl acrylate. In Example 4, the continuous phase contains calcium phosphate, sodium dodecylsulfonate (3% and 0.03% of water) and water. The dispersed phase contains the monomers styrene and butyl acrylate.

In the recent Office Action it is argued that one of ordinary skill in the art would envision the use of acrylic acid in lieu of the butyl acrylate component in the examples, particularly Example 3, in light of the disclosure at col. 10. However, as with the previously discussed prior art, there is no suggestion in the disclosure of US '394 that water-soluble monomers exhibiting a carboxylic acid group such as acrylic acid or methacrylic acid are equivalent to water-insoluble monomers such as butyl acrylate in the context of suspension polymerization. While US '394 describes a broad genus of monomers encompassing both acrylic acid and butyl acrylate, there is nothing indicated in the disclosure of US '394 that these monomers would be equivalent in the context of suspension polymerization. As noted in applicants' specification, water-soluble monomers and water-insoluble monomers are not equivalent in suspension polymerization.

The disclosure of US '394 fails to describe an embodiment in accordance with applicants' claimed invention. As noted above, to establish anticipation it is incumbent upon the Patent and Trademark Office to indicate where each and every feature of the claimed invention is described in the disclosure of the prior art reference. In the instance case, US '394 fails to provide any description of a suspension polymerization process that contains both a water soluble monomer containing a carboxylic acid group and a water-insoluble monomer. Further, there is no disclosure of a suspension stabilizer having a particle size of less than 100 nm. Nor is there a disclosure or suggestion of a dispersed phase containing at least 20 weight % of a carboxylic acid containing monomer. Further, there is no disclosure of an aqueous phase containing 10-50 weight % of a water-soluble inorganic salt.

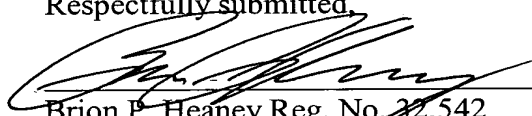
US '394 also fails to provide sufficient motivation which would lead one of ordinary skill in the art to an embodiment in accordance with applicants' claimed invention. While it is alleged in the rejection that acrylic acid and butyl acrylate are equivalents in light of the disclosure of US

'394, no such disclosure of equivalence is present in the prior art reference. Further, in the context of suspension polymerization, one of ordinary skill in the art is aware that water-soluble monomers, such as acrylic acid, are not equivalent to water-insoluble monomers such as butyl acrylate. Nothing within the rejection suggests otherwise. The mere listing of suitable monomers does not indicate that all monomers function equivalently within the polymerization process of US '394. In particular, the disclosure of US '394 does not suggest that in a suspension polymerization process one could simply replace a dispersed phase containing 20% of a water-insoluble monomer with a dispersed phase containing 20 weight % of a water-soluble monomer. The allegation of equivalence between water-soluble and water-insoluble monomers in a suspension polymerization process is contrary to the understanding within the art and nothing within the disclosure of US '394 suggests otherwise.

In view of the above remarks, it is respectfully submitted that US '394 fails to anticipate or render obvious applicants' claimed invention. Withdrawal of the rejection under 35 U.S.C. § 102(b)/103 is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

  
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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

1. (Four Times Amended) A process for making polymeric particles comprising:  
polymerizing ethylenically unsaturated monomers as a dispersed phase suspended  
in an aqueous phase,  
wherein the ethylenically unsaturated monomers comprise at least one monomer  
A and at least one monomer B, wherein monomer A is a water soluble ethylenically unsaturated  
monomer containing a carboxylic acid group and monomer B is a water-insoluble ethylenically  
unsaturated monomer,  
said aqueous phase containing a water-insoluble particulate stabilizer having a size of less  
than 100 nm and an effective amount of water-soluble inorganic salt to allow formation of stable  
monomer droplets in the aqueous phase, said monomer droplets comprising at least 20% by  
weight of said carboxylic acid containing monomer A wherein the water-soluble inorganic salts  
present in the aqueous phase is in a concentration of from 10% to 50% by weight.
3. (Twice Amended) The process according to claim 1, wherein the carboxylic acid  
containing monomer is selected from the group consisting of ~~an~~ acrylic acid and a methacrylic  
acid.
12. (Amended) The process according to claim 6 11, wherein said water soluble  
inorganic salt is sodium chloride.
18. (Amended) The process according to claim ~~12~~ 17, wherein said promoter is  
polydiethanolamine.
21. (Amended) The process according to claim ~~15~~ 20, wherein said polymerization  
inhibitor is potassium dichromate or cupric sulfate pentahydrate.